Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-88. (canceled).

89. (currently amended) A method of forming arrays of oligonucleotides on a solid support comprising:

providing a solid support having an array of positions each suitable for attachment of an oligonucleotide;

attaching linkers to the solid support surfaces, wherein the linkers are suitable for coupling oligonucleotides to the solid support, at each of the array positions; and

forming an array of a plurality of capture oligonucleotides on the solid support by a series of cycles, each of the cycles comprising:

activating selected array positions for attachment of multimer nucleotides;

selecting multimer nucleotides with nucleotide sequences differing from each other by at least 2 nucleotides, wherein no two dimers in the multimers are complementary to each other and the multimers would not result in self-pairing or hairpin formulation; and

attaching multimer nucleotides at the activated array positions, wherein the multimer nucleotides are selected so that the plurality of capture oligonucleotides formed by attachment of a plurality of the multimer nucleotides at each activated array position have nucleotide sequences selected to hybridize with complementary oligonucleotide target sequences under uniform hybridization conditions across the array of oligonucleotides and so that each of the capture oligonucleotides have substantial sequence differences to prevent cross-reactivity, wherein the multimer is formed from multiple nucleotides linked together.

90. (previously presented) The method according to claim 89, wherein said forming comprises:

applying a multimer nucleotide along parallel rows of the solid support;

turning the support 90 degrees;

attaching a multimer nucleotide along parallel rows of the solid support to form oligonucleotides at row intersections having 2 sets of multimer nucleotides; and

repeating said applying, turning, and attaching until the oligonucleotides at the row intersections have 6 sets of multimer nucleotides.

91. (previously presented) The method according to claim 89, wherein the solid support is made from a material selected from the group consisting of plastic, ceramic, metal, resin, gel, glass, silicon, and composites thereof.

92. (previously presented) The method according to claim 89, wherein the solid support is in a form selected from the group consisting of slides, discs, membranes, films, and composites thereof.

93. (previously presented) The method according to claim 89, wherein the solid support has an array of positions with the capture oligonucleotides at different positions having different nucleotide sequences.

94. (previously presented) The method according to claim 93, wherein the solid support has wells, raised regions, or etched trenches.

95. (previously presented) The method according to claim 94, wherein the solid support is in the form of a microtiter plate.

96. (previously presented) The method according to claim 89, wherein said attaching a linker comprises:

silanizing a surface of the solid support.

97. (previously presented) The method according to claim 89, wherein the solid support is functionalized with olefin, amino, hydroxyl, silanol, aldehyde, keto, halo, acyl halide, or carboxyl groups.

98. (previously presented) The method according to claim 97, wherein the solid support is functionalized with an amino group by reaction with an amine compound selected from the group consisting of 3-aminopropyl triethoxysilane, 3-aminopropylmethyldiethoxysilane, 3-aminopropyl dimethylethoxysilane, 3-aminopropyl

trimethoxysilane, N-(2-aminoethyl)-3-aminopropylmethyl dimethoxysilane, N-(2-aminoethyl-3-aminopropyl) trimethoxysilane, aminophenyl trimethoxysilane, 4-aminobutyldimethyl methoxysilane, 4-aminobutyl triethoxysilane, aminoethylaminomethylphenethyl trimethoxysilane, and mixtures thereof.

99. (previously presented) The method according to claim 97, wherein the solid support is functionalized with an olefin-containing silane.

100. (previously presented) The method according to claim 99, wherein the olefin-containing silane is selected from the group consisting of 3-(trimethoxysilyl)propyl methacrylate, *N*-[3-(trimethoxysilyl)propyl]-*N*'-(4-vinylbenzyl)ethylenediamine, triethoxyvinylsilane, triethylvinylsilane, vinyltrichlorosilane, vinyltrimethoxysilane, vinyltrimethylsilane, and mixtures thereof.

101. (previously presented)The method according to claim 99, wherein the silanized support is polymerized with an olefin containing monomer.

102. (previously presented) The method according to claim 101, wherein the olefin-containing monomer contains a functional group.

103. (previously presented) The method according to claim 102, wherein the olefin-containing monomer is selected from the group consisting of acrylic acid, methacrylic acid, vinylacetic acid, 4-vinylbenzoic acid, itaconic acid, allyl amine, allylethylamine, 4-aminostryrene, 2-aminoethyl methacrylate, acryloyl chloride, methacryloyl chloride, chlorostyrene, dichlorostyrene, 4-hydroxystyrene, hydroxymethylstyrene, vinylbenzyl alcohol, allyl alcohol, 2-hydroxyethyl methacrylate, poly(ethylene glycol) methacrylate, and mixtures thereof.

104. (previously presented) The method according to claim 101, wherein the support is polymerized with a monomer selected from the group consisting of acrylic acid, acrylamide, methacrylic acid, vinylacetic acid, 4-vinylbenzoic acid, itaconic acid, allyl amine, allylethylamine, 4-aminostyrene, 2-aminoethyl methacrylate, acryloyl chloride, methacryloyl chloride, chlorostyrene, dischlorostyrene, 4-hydroxystyrene, hydroxymethyl

styrene, vinylbenzyl alcohol, allyl alcohol, 2-hydroxyethyl methacrylate, poly(ethylene glycol) methacrylate, and mixtures thereof, together with a monomer selected from the group consisting of acrylic acid, methacrylic acid, vinylacetic acid, 4-vinylbenzoic acid, itaconic acid, allyl amine, allylethylamine, 4-aminostyrene, 2-aminoethyl methacrylate, acryloyl chloride, methacryloyl chloride, chlorostyrene, dichlorostyrene, 4-hydroxystyrene, hydroxymethyl styrene, vinylbenzyl alcohol, allyl alcohol, 2-hydroxyethyl methacrylate, poly(ethylene glycol) methacrylate, methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, styrene, 1-vinylimidazole, 2-vinylpyridine, 4-vinylpyridine, divinylbenzene, ethylene glycol dimethacrylate, *N,N'*-methylenediacrylamide, *N,N'*-phenylenediacrylamide, 3,5-bis(acryloylamido) benzoic acid, pentaerythritol triacrylate, trimethylolpropane trimethacrylate, pentaerytrithol tetraacrylate, trimethylolpropane ethoxylate (14/3 EO/OH) triacrylate, trimethylolpropane ethoxylate (7/3 EO/OH) triacrylate, trimethylolpropane propoxylate (1 PO/OH) triacrylate, trimethylolpropane propoxylate (2 PO/OH) triacrylate, and mixtures thereof.

105. (previously presented) The method according to claim 99, wherein said forming comprises:

photolithographically masking the solid support;

photochemically deprotecting the linker or outermost nucleotides attached to the solid support at unmasked array positions; and

adding nucleotides with a photoactivatable protecting group at photochemically deprotected array positions.

106. (previously presented) The method according to claim 105, wherein the photoactivable protecting group is selected from the group consisting of nitroveratryloxycarbonyl, o-nitrobenzyloxycarbonyl, fluorenylmethoxycarbonyl, dimethyl-dimethoxybenzyloxycarbonyl, oxymethyleneanthraquinone, and mixtures thereof.

107. (previously presented) The method according to claim 105, wherein the protecting group protects the nucleotides at their 3' or 5' ends.

108. (previously presented) The method according to claim 105 further comprising:

washing the solid support after said photochemically deprotecting and said adding.

109. (currently amended) The method according to claim 89, wherein the solid support surface is non-hydrolyzable.

110. (previously presented) The method according to claim 89, wherein the solid support has an array of positions with the plurality of capture oligonucleotides having the same nucleotide sequences.

111. (previously presented) The method according to claim 93, wherein each capture oligonucleotide differs from its adjacent capture oligonucleotide on the array by at least 25% of its nucleotides, when aligned to each other.

112. (previously presented) The method according to claim 93, wherein each capture oligonucleotide is separated from adjacent capture oligonucleotides by barrier oligonucleotides which are shorter than the capture oligonucleotides.

113-147 (canceled).

148. (previously presented) The method according to claim 89, wherein the capture oligonucleotides each have greater than sixteen nucleotides.

149. (new) The method according to claim 89, wherein the multimers are selected from the group consisting of tetramers, pentamers, and hexamers.

150. (new) The method according to claim 149, wherein the multimers are tetramers.

151. (new) The method according to claim 150, wherein the tetramers are non-palindromic and non-repetitive.

152. (new) The method according to claim 150, wherein the tetramers are set forth in Table 1.

153. (new) The method according to claim 150, wherein the capture oligonucleotide probes have nucleotide sequences differing from each other by at least 6 nucleotides.